

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

1. – 10. (Canceled)

11. (Currently Amended) In a surgical navigation system a substantially minimally invasive dynamic reference frame for dynamically referencing portions of an anatomy, comprising:

a body portion selectively attachable to a portion of the anatomy, the body portion having a sidewall defining an exterior perimeter defining an interior portion and a passage through the sidewall into the interior portion;

a navigation portion to at least one of sense, transmit, or combinations thereof a characteristic operable to pass through the passage defined by the sidewall and be positioned in the interior portion; and

a holding section to hold said body portion relative to the portion of the anatomy;

wherein said holding section substantially non-invasively holds said body portion relative to the portion of the anatomy;

wherein the navigation portion is operable to be selectively positioned in the interior portion through the passage through the sidewall.

12. (Canceled)

13. (Original) The surgical navigation system of Claim 11, wherein said characteristic includes at least one of an optical characteristic, a electro-magnetic characteristic, an acoustic characteristic, a light characteristic, and combinations thereof.

14. (Original) The surgical navigation system of Claim 11, wherein said navigation portion includes at least one coil to at least one of transmit and receive an electro-magnetic field.

15. (Original) The surgical navigation system of Claim 14, further comprising at least two coils positioned at an angle relative to one another;

wherein a plurality of degrees of freedom of movement of the navigation portion can be determined.

16. (Original) The surgical navigation system of Claim 11, wherein said holding section includes a tensioning member extending from said body portion to engage at least one of the portion of the anatomy or an area adjacent to a portion of the anatomy.

17. (Canceled)

18. (Withdrawn) The surgical navigation system of Claim 11, wherein said holding section includes a substantially moldable material that may be molded to a selected shape;

wherein said holding section is operable to substantially accurately repeatably engage the portion of the anatomy.

19. (Original) The surgical navigation system of Claim 11, further comprising:

a fiducial marker portion.

20. (Withdrawn) The surgical navigation system of Claim 11, wherein said holding section is contoured to the selected portion of the anatomy to allow for substantially repeatable placement of the holding section.

21. - 27. (Canceled)

28. (Previously Presented) In a surgical navigation system a substantially minimally invasive dynamic reference frame for dynamically referencing a portion of an anatomy, comprising:

a body portion selectively attachable to the portion of the anatomy;

a navigation portion associated with the body portion to at least one of sense a characteristic, transmit a characteristic, or combinations thereof;

a holding section operable to contact an exterior of the portion of the anatomy to assist in holding the body portion relative to the portion of the anatomy;

a fiducial portion operable to be imaged and determined in the image data;

wherein the body portion defines a volume enclosed by an outer surface and a recess within the outer surface of the body portion;

wherein the body portion defines a concave area operable to engage at least a portion of a tensioning member to assist in holding the body portion relative to the portion of the anatomy.

29. (Currently Amended) The surgical navigation system of Claim 28, wherein said body portion defines a volume enclosed by an outside surface;

wherein said body portion further defines a recess within the volume to receive the navigation portion;

wherein the navigation portion is operable to be selectively positioned in the recess through a passage through the outside surface;

wherein the navigation portion is operable to be removed from the recess during imaging of the anatomy to assist in eliminating any distortion that may be caused by the navigation portion.

30. (Previously Presented) The surgical navigation system of Claim 29, wherein the navigation portion includes a coil of a conducting material;
wherein said characteristic is an electromagnetic field.

31. (Previously Presented) The surgical navigation system of Claim 29, wherein the recess includes an elongated bore extending from a side of the body portion.

32. (Previously Presented) The surgical navigation system of Claim 28, wherein said body portion and said holding section are formed of a single member.

33. (Previously Presented) The surgical navigation system of Claim 32, wherein said single member is seamlessly and uniformly formed.

34. (Withdrawn) The surgical navigation system of Claim 28, wherein said body portion and said holding section are selectively separable from one another;
wherein said holding section includes a plurality of holding sections operable to be selectively interconnected with said body portion.

35. (Withdrawn) The surgical navigation system of Claim 34, wherein the plurality of holding sections includes at least one holding section operable to the interconnected with a surface of the anatomy, and orifice of the anatomy, or combinations thereof.

36. (Withdrawn) The surgical navigation system of Claim 37, wherein the orifice of the anatomy includes an ear canal, an oral cavity, a nostril, or combinations thereof.

37. (Withdrawn) The surgical navigation system of Claim 35, wherein the surface includes a skin surface, a contour of the ear, a contour of the abdomen, a contour of the nose, a contour of the chest, or combinations thereof.

38. (Previously Presented) The surgical navigation system of Claim 28, further comprising:

a tensioning member operable to interact with the holding section to assist in holding the body portion relative to the portion of the anatomy.

39. (Previously Presented) The surgical navigation system of Claim 28, wherein at least one of the body portion, the holding section, or combinations thereof define a localization divot.

40. (Previously Presented) The surgical navigation system of Claim 28, wherein at least one of the body portion, the holding section, or combinations thereof define a recess having a surface positioned within the at least one of the body portion, the holding section, or combinations thereof.

41. (Currently Amended) In a surgical navigation system having a substantially minimally invasive dynamic reference frame for dynamically referencing a portion of an anatomy, the surgical navigation system comprising:

a first section defining a volume sized and operable to be positioned relative to the portion of the anatomy;

a tracking device associated with the first section to at least one of sense a characteristic, transmit a characteristic, or combinations thereof; and

a holding section associated with the first section and operable to assist in holding the first section relative to the portion of the anatomy;

wherein at least one of the first section, the holding section, or combinations thereof defines a recess that is complementary in shape to the tracking device and is operable to receive the tracking device substantially within the volume.

42. (Previously Presented) The surgical navigation system of Claim 41, wherein the first section and the holding section are formed as a seamless uniform member.

43. (Canceled)

44. (Withdrawn) The surgical navigation system of Claim 41, wherein the holding section is operable to project into an anatomical orifice of the anatomy.

45. (Previously Presented) The surgical navigation system of Claim 41, wherein the holding section is sized and configured to substantially match a contour of the anatomy.

46. (Previously Presented) The surgical navigation system of Claim 41, wherein the holding section includes a concave region bound on at least two sides by a first region and a second region where the first region and the second region are substantially planar with one another.

47. (Currently Amended) ~~The surgical navigation system of Claim 41, further comprising:~~

In a surgical navigation system having a substantially minimally invasive dynamic reference frame for dynamically referencing a portion of an anatomy, the surgical navigation system comprising:

a first section defining a volume sized and operable to be positioned relative to the portion of the anatomy;

a tracking device associated with the first section to at least one of sense a characteristic, transmit a characteristic, or combinations thereof;

a holding section associated with the first section and operable to assist in holding the first section relative to the portion of the anatomy; and

a tensioning member;

wherein the tensioning member extends over and engages at least a portion of the concave regions defined by the holding section to assist in holding the first section relative to the anatomy.

48. (Previously Presented) The surgical navigation system of Claim 41, further comprising:

a fiducial portion.

49. (Previously Presented) The surgical navigation system of Claim 41, further comprising:

a localization depression;

wherein the localization depression is defined by at least one of the first section, the holding section, or combinations thereof;

wherein the localization depression is operable to interact with a tool.

50. (Previously Presented) The surgical navigation system of Claim 11, wherein said body portion includes an adhesive receiving section;

wherein said adhesive receiving section allows for the placement of the adhesive between said body portion and the anatomy to assist in fixing the body portion to the portion of the anatomy.

51. (Canceled)

52. (Previously Presented) The surgical navigation system of Claim 11, wherein said holding section defines a central trough area that is substantially concave having a first peak on a first side of the body portion and a second peak on a second side of the body portion substantially opposed to each other and a tensioning member extending from said body portion to engage at least one of the portion of the anatomy or an area adjacent to a portion of the anatomy.

53. (Previously Presented) The surgical navigation system of Claim 52, wherein said body portion is substantially cylindrical and the holding section is defined on a first side and an anatomy contacting portion is defined on a second side;

said anatomy contacting portion defining a depression operable to receive a material;

a navigation bore defined through a sidewall of the body portion from the passage between the first side and the second side; and

a localization divot defined at the side wall at a position spaced apart from the navigation portion bore.

54. (New) The surgical navigation system of Claim 11, wherein the navigation portion is operable to be removed from the interior portion during imaging of the anatomy to assist in eliminating any distortion that may be caused by the navigation portion.

55. (New) The surgical navigation system of Claim 16, wherein the body portion defines a concave area operable to engage at least a portion of the tensioning member to assist in holding the body portion relative to the portion of the anatomy.